DRAFT Internal Policy
Determination of the Origin of Perennial Streams
NC Division of Water Quality
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Background: At the current time, the DWQ relies on an internal policy to describe the thresholds between intermittent and perennial channels. A Stream Technical Advisory Committee (TAC) was established by the DWQ in December 1998 to provide technical, scientific input related to the definitions of streams and waterbodies in the Neuse River basin. The TAC approved a stream classification methodology that evaluates the geomorphology, hydrology and biology of stream features to determine the origin of intermittent streams (NCDWQ 1999). DWQ utilizes a numerical cutoff of 19 points with this evaluation form as an appropriate value to determine where intermittent stream flow begins, but did not recommended a numerical cutoff for the perennial threshold.

Recent Investigations: As part of a recent investigation for the City of Greensboro, personnel with Law Engineering and Environmental Services, with the support of DWQ personnel, used a modification of the DWQ stream classification method to recommend a perennial stream origin numerical cutoff of 30 points (Lawson, et al. 2002). In addition, DWQ biologists have been looking for the presence of keystone aquatic species as reliable determinants for perennial channels. This research suggests that the presence of a select group of benthic macroinvertebrates that require water for their entire life cycles may be a reliable method to determine the origins of perennial channels. The list of keystone organisms is still being developed; however, it does include members of the insect orders Ephemeroptera, Plecoptera and Trichoptera.

Revised DWQ Policy for the Definition of Perennial Stream Origins: A perennial stream is defined as a well-defined channel that contains water year round during a year of normal rainfall with the aquatic bed located below the water table for most of the year (NCEMC 2000). This definition also notes that perennial streams exhibit the typical biological, hydrological, and physical characteristics commonly associated with the continuous conveyance of water.

Recent information indicates that the DWQ policy for the determination of the origin of perennial channels should include results of these investigations. Therefore we propose that the policy for this determination should be as follows:

A stream channel is perennial when any of the following criteria are met:

- Biological indicators such as fish, crayfish, amphibians, mussels (clams) or large (multi-year) tadpoles are present. OR
- Benthic macroinvertebrates that require water for entire life cycles are present[1]. These organisms include, but are not limited to, Ephemeroptera (mayflies), Plecoptera (stoneflies) or Trichoptera (caddisflies). OR
- A numerical value of 30 points is determined from the most recent version of the DWQ stream classification form.

[1] Recognition and/or identification of these organisms would require Division based training.

List of References

Lawson, J., R. Darling, D. Penrose, and J.D. Gregory. 2002. Stream Identification and Mapping for Water-Supply Watershed Protection. In Proceedings, Watershed 2002, February 23-27, 2002, Fort Lauderdale, FL.

NCDWQ. (North Carolina Division of Water Quality) 1999. N. C. DWQ Stream Classification Form – Internal Guidance Manual. North Carolina Division of Water Quality, Wetlands/401 Unit

NCEMC 2000. North Carolina Administrative Code 15A NCAC 2B .0100. North Carolina Environmental Management Commission, Raleigh, North Carolina.